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The Effect of Establishment of Integrated Management System (IMS) on Performance Ports and Shipping Administration Using Balanced Scorecard (A Case Study in Iran)

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Abstract

This research aims to identify the effect of establishment of integrated management system on performance of Ports and Shipping Organization. This research is of descriptive type in scaling way. It studies the effects of establishment of integrated management system on Ports and Shipping organization's performance from the experts' point of view. One may examines his or her point of view about the effects of establishment of integrated management system regarding balances scorecard on four organizational performance factors including financial performance, organizational processes, beneficiaries' satisfaction and organizational growth and learning. Statistical universe is including all experts in Ports and Shipping Administration in Sistan and Balouchestan who are 120 based on statistics and budget list. Due to inaccessibility to all members in statistical universe, sample members are randomly selected from a presented list by the organization. In this research, a questionnaire used for obtaining primary data in order to analyze. For this purpose, Cronbach alpha method used for evaluating reliability. For this purpose, an initial sample including 30 questionnaires became a pre-test and then using the obtained data from these questionnaires and with the aid of SPSS software, reliability was calculated which was 0/78. In this research, descriptive and inferential methods

are used for analyzing data from the samples. Correlated t-Test is used for testing hypothesis because testing hypothesis mainly requires analyzing the mean answers and the variables in point are of interval type.

Key words: Performance; Integrated management system; Balanced scorecard

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INTRODUCTION

In Persian language, system is called "samaneh": which in fact, it is a series of different elements and parts, which operate with coordination and integrity, and provide reaching to an ultimate goal with the aid of designed mechanisms. Different definitions have suggested for a system. Two common definitions are as follows:

*A system is a regular collection of interdependent elements which interacting with each other for reaching to a common goal (hardware definition)

*A system includes some of interdependent methods which with performing the mentioned methods, some parts of organization goals would be fulfilled (software definition) (Olive & Sjostrand, 2002)

Since early1950, systems increasingly have discussed. In fact, before this era, performing of different tasks and various contexts, whether small or big, industrial or non-industrial, have not been according to certain and designed procedures and programs. In addition, Goals in turn were not identifiable and distinct such as today ones which become specific and categorized in different levels. These problems and similar cases generally lead to many

executive problems. The above-mentioned reasons and other lateral factors explain the essence of emergence and promotion of some mechanisms, which cause to more clarity of activities while guarantee reaching to designed goals. In such conditions, system discussion in its new concept, takes very big step in satisfying the considered demands.

Today, managers work in such a competitive and complex environment that creating appropriate goals and understanding how to reach them, became a vital fact. One of the most important reasons of more success in private organizations than public organizations is that these organizations are closer to integrated –oriented organizations. These organizations have selected a new way for management called integrated management. (Norton & Kaplan, 2000). Over time, some organizations understood the limitations of traditional accounting system in measuring organization performance and began to create some systems, which measured these organization insensible assets which traditional accounting system was not able to. Many organizations used these systems besides traditional accounting systems for measuring organization performance. Nevertheless, based on most scholars and managers view, coordination of these two systems cannot measure thoroughly every dimension of organization.

Thus, organizations need such a system, which measures degree of organization success besides measuring all of organization dimensions for reaching to its prophecy and outlook. This system also can notably help managers in planning and strategic decisions.

It is a new tool for completing traditional indices for measuring performance (BSC) (balanced score card). The balanced score card makes a relationship between strategic goals and criteria, and is responsible for planning, set goals and co -direction of integrated management factors. (Ahn, 2001)

Methods and models of determining strategy, and consequentially integrated management do not follow from a specific technique and instruction; each includes one concept and one insight. Herein, there are many integrated planning models, which are selected due to company's nature, its industry position and environmental conditions.

Thus, we can claim that in every company which implemented integrated management classic strategic planning model. (Thompson & Strickland, 2005). Management systems such as other modern practical events have changed day by day. Rules and regulations dominated these mechanisms have changed a lot and their procedures, manner of set goals and task proceeding methods have been altered, but one thing is left fixed; the goal of all these changes is reaching to systems with much adaptability to expressed needs and more applicable. Because of this ideology was the emergence of new generation of industrial and service systems. During

these alterations and changes, another problem began to emerge. This new problem was interference of current systems and lack of coordination between them. So, it was necessary to find a new solution for this problem. System designers presented a useful and practical strategy and in fact, they solve the resulting problem itself. This solution was not anything but management systems. These systems besides covering principles and rules dominated on pervious systems, in turn caused coordination between different parts involved and prevented disconnection of activities and create many benefits such as real and clear definition of goals, preventing of tasks interference and or paralleling and decreasing costs and bring developing dynamic information in system etc. Today in many organizations, the ranges of management systems used such as financial management system, commercial management system, human source management system for leading and coordinating among different parts of organizations. (David, 2008)

In recent years, globalization was an important and effective topic. Many of commercial, industrial, political, social and economical relations have affected by this event. This topic has had many effects on business and traditional commerce. Standards play an important role. In fact, for every type of commerce and business, required such criteria for assessing activities and standards could have make such criteria for assessing activities and standards could have undertaken this responsibility well for this task.

Increasing and developing different management systems, there was a need for suitable definitions for these systems so that they can be pervasive and used in different points of various process and activities.

Thus, discussion about codifying some standards for different management system has become a reflective subject in using these systems.

Standard organizations and specifically International Standard Organization i.e. ISO as first assembly began to codify standard management system. This action began with codifying ISO9000 quality system in 1987 and then completed in 1994. As it was very welcoming it continued in next years.

In 1996 and following success of quality guarantee system 1994: ISO 9001, which actually accounted as a strong management system, environmental management system codified and published in a standard frame of ISO14001:1996 by International Standard ISO. The structure of this management system has an obvious feature and it is base on Dr. Deming's known theory known as Deming cycle. Basis of this theory is that for establishment and developing an effective and efficient system in an organization, observation of four different and distinct steps while having interconnected relationship; will be very effective and useful. These four steps including: planning, (designing) implementation and operation, checking and action (amendment). Anyway,

many of different management system designers used this process as a basis of designing systems regarding the structure of Deming cycle (PDCA). In result, new designed systems specifically management systems and more specifically in recent decade, were similar to each other. Despite of differences in various cases, such as system performance base and or their practical goals, this similarity was really sensible and comprehensible for those who deal with these systems.

Many samples of these similarities with comparing standard and assessing immunology and professional hygienic called OHSAS 14001:1996 and standard ISO14001:1996, which both based exactly on Deming cycle are observable.

In line with this, International Standard Organization pursued the continuity of this procedure seriously and included it through in published standards. For example, new edition of quality management systems of ISO9001:2001, which considerably adapt with standard structures of ISO 14001:1996 and OHSAS18001:1999. (However, OHSAS18001:1999 is not a ISO standard organization)

Integration of management systems approach has done with codifying and publishing third edition quality management in form of ISO9001:2001 and has changed drastically. Regarding that, one of the goals of these changes has more adaptability with environmental standards ISO14001:1996, the idea of establishment of these two standards has emphasized. On the other hand, regarding undeniable similarities between immunology and professional hygienic management standards OHSAS18001:1999 and ISO 14000:1996 and a lot of parallelism presented between these two standards, integrated establishment of three mentioned standards.

Today, using and establishing integrated management systems (IMS) with aim of integrating three standards ISO9000, ISO4000, OHSAS18000 towards reaching to a comprehensive management system has become common and despite of passing short time of beginning of discussion and using it, It has brought forth many positive and considerable results.

It seems that integrated establishment of these three system in form of integrated management system could prepare needed grounds for continual improving in each three field, and provide a considerable opportunity for organization in order to adapt with presented international standards. At present, many organizations in our country try to obtain competitive benefit from the turbulent world with using and establishing this system which the necessity of assessing their performance in different dimensions help them more in passing from upcoming challenges and success and moving towards their goals and perspectives.

Today organizations are introducing changes and wholly altering developments in their own competitive environments; a change which characterized by

transferring from industrial era and entering to information era. The organizations who are seeking a better future in new conditions, assessing management through financial indices will be effective no more.

Moreover, considering insensible assets in measurement systems have found more necessity and it can be explained that measurement financial indices have been developed by three perspectives; namely customer, process and employee. It seems necessary to co-orientate these three perspectives towards organization strategies. In this study, I tried to study the effect of establishing integrated management system on performance of one of public organizations (Sistan and Balouchestan Shipping and Porting Administration, as a first port in Iran which received ISO certificate) using balanced score card which prepare a framework for describing intra-organizational activities through measurement in four different viewpoints. A good score card creates a casual relationship between current organizational activities and long-range success, because growth of these organizations depends on their insensible assets, this method would be a vital tool for their control and management. (Creelman & Makhijani, 2005)

In this study, we try to study different dimensions of IMS system from a selective criteria perspective. (Balanced scorecard). In this work and based on balanced score card, financial perspective, because of having direct relationship with beneficiaries group demands (owners, shareholders, banks, government etc) is focus of management and control activities. On the other hand, in customer perspective, customer satisfaction is a main content of most management systems. As in these systems, customers placed at first and at the end of process; therefore, its evaluation is very important.

On one hand, identifying systematic needs of customer is a deterministic requirement and on the other hand, the information related to customer satisfaction is a variable, which studied in performance evaluation of integrated management systems. In this system, it focused on top management responsibility and accountability towards customer satisfaction.

To overcome these problems and barriers of implementing effective strategy and create a comprehensive management system and improving performance; two eminent management scientists called Professor Robert Kaplan and Dr. David Norton in 1992, proposed an innovative system called balanced score card as a comprehensive framework for performance evaluation, strategy progressing and relationship improvement which make balance among short-term and long-term goals, financial and nonfinancial measurements, internal and external performance, internal and external beneficiaries, conductor and performance dependent indices and drivers and strategy barriers. Balanced score card is a combination of performance evaluation criteria which include past, present and future

performance indices and place nonfinancial measures next to financial measures. Moreover, it presents ubiquitous view to organization managers about what happens in and out of the organization.

(1) Balanced score card management system is the only available framework in the world which is able to integrate strategies with performance and budget. Thus, in a report published by organization of economic cooperation development (OECD) in 2007, for presenting evaluation system states and performance management and operational budgeting, it introduced Balanced score card management system as the most comprehensive available system for establishing an evaluation system of performance management.

(2) Balanced scorecard presents a performance evaluation and management system beyond and more comprehensive than financial measurement systems. In this method, besides financial indices, organization state measured with indices from other three perspectives, in a causal relationship. Financial performance depends on customer satisfaction or dissatisfaction. Customer satisfaction or dissatisfaction is the result of efficiency, proficiency and quality of organization processes. How to implement processes also depends on human source quality, motivation, and their freedom as well as information systems. In fact, balanced score card makes a causal relationship between different parts of an organization and it considers organization as a united and integrated body.

(3) Balanced score card is able to connect strategy to goals and operational and implementation plans determined in four perspectives. In one hand, conversion of strategic orientation into determined goals and plans and on the other hand, establishment of a measurement system in order to control how to implement goals and improve plans, have increased balanced score card's appeal and usage.

(4) Balanced scorecard expresses management expectations from different organization areas coordinately and co-directional with viewpoint and strategy. Thus, managers can determine organization expectations and goals from different units clearly and co-directional with organization perspective and strategy and express it to different parts managers and it can help much to implement integrated management system. In fact, results from implementing integrated management system could be as follows:

- a) Top quality, less cost/ risk and serve intended customer services
- b) Better security, health and environment for customers and employees
- c) Continuing improvement, customer oriented, human source education and development

In general, the aim of standardizing of activities and processes beyond accomplishing scientific, technical and technological goals finally is economical goal.

Thus, scientific, technical, industrial and innovation usage in organizations are simply tools for flourishing, improvement and economic inflorescence, commerce development and eliminating commercial prohibitions.

Thus, the general goal of identifying the effect of establishing integrated management system on Ports and Shipping organization's performance (Sistan and Balouchestan) is studied and special goals are as follows:

- (1) Identifying the effect of establishing integrated management system on financial performance
- (2) Identifying the effect of establishing integrated management system on processes
- (3) Identifying the effect of establishing integrated management system on beneficiaries' satisfaction.
- (4) Identifying the effect of establishing integrated management system on improvement of organization learning and growth.

1. RESEARCH QUESTIONS

Main question: Does the establishment of integrated management system have any effect on Ports and Shipping organization (Sistan and Balouchestan)?

Secondary questions:

- (1) Does the establishment of integrated management system have any effect on financial performance?
- (2) Does the establishment of integrated management system have any effect on internal processes?
- (3) Does the establishment of integrated management system cause to satisfy the beneficiaries?
- (4) Does the establishment of integrated management system have any positive effect on improving learning and organization growth?

2. METHODOLOGY

This research is of descriptive type and in scaling way. It studies the effects of establishing integrated management system on Ports and Shipping organization's performance from this organization's experts point of view and one may examine his or her point of view about the effects of establishment of integrated management system regarding balanced scorecard on four organizational performance factors including: financial performance, organizational processes, beneficiaries' satisfaction and organizational growth and learning.

In this research, statistical universe is including all experts in Ports and Shipping Administration in Sistan and Balouchestan who are 120 based on statistics and budget list. Calculated sample from Cochran formula is 105. Due to inaccessibility to all members in statistical universe, sample members are randomly selected from a presented list by the organization. Questionnaire is used for initial data in order to analyze. Questionnaire is a series of questions that a respondent answers regarding them. We use questionnaire when we want to collect lot information

easily and quickly. This questionnaire is including two parts:

General questions: For general questions, sociological and demography are studied including tenure in department, tenure in organization.

Special questions: This section includes 61 items that the 12 first items are related to customer, the next 25 items are related to growth, and learning and the last 24 items are selected for organizational processes. Cronbach alpha method is used for determining the test reliability. For this purpose, an initial example including 30 questionnaires became a pre-test and then using the obtained data from these questionnaires and with the aid of SPSS software, reliability was calculated which was 0/78 and this number indicated that the used questionnaire has the necessary reliability. Before starting field and operational work, it is necessary to test the provided questionnaire in a small group of respondents to explore its internal conflict and ambiguity. Hereby, we can be sure that questionnaires do not cause to puzzle and ambiguity in respondents and participants. In line with this, this questionnaire distributed among 10 respondents and 3 university professor before distribution in order to reduce these ambiguities as least as possible and also to increase its reliability and validity. Finally, descriptive and inferential statistical methods are used for analyzing the obtained data from the samples and SPSS software is used for analyzing information.

-descriptive statistics: This statistics simply deals with community description and aims to calculate community parameters. In this research, frequency distribution tables, mean and standard deviation are used in descriptive statistics section.

-inferential statistics: As testing hypothesis mainly requires analyzing the mean answers of people and studied variables are of interval type, correlated T-test is

used mainly for testing hypothesis.

3. DATA ANALYSIS

3.1 Results from General Questions

Frequency distribution by gender showed that 9/5 from the respondents are female and 90/5 are males. Regarding the obtained numbers, we can say that the most of Ports and Shipping employees are males. 19 percent are between 20-30, 68/9 is 31-40, 9/5 is 41-50 and 2/9 are more than 50 years old. From educational level, 6/7 are holding M.A, 13/3 associated degree and 80 percent B.A. 19 percent of them have up to 5 years, 17 percent 6-10, 9/5 11-15 years tenure in organization. 8/1 of sample people have up to 5 years, 14/3 percent 6-10 and 7/6 percent have 11-15 years tenure in the department.

3.2 Inferential Statistics

First item: Does the establishment of integrated management system satisfy the beneficiaries?

For answering this question, T-test of correlated groups is used. Null assumption and contrary assumption is as follows:

Null assumption= establishing the integrated management system satisfy the beneficiaries.

Contrary assumption= establishing the integrated management system does not satisfy the beneficiaries.

Table1
Descriptive Statistics the Establishment Effect of Integrated Management System in Beneficiaries' Satisfaction

	Mean	Number	Standard deviation
Pre- establishment	31/6	105	3/46
Post- establishment	37/19	1005	2/67

Table 2
T-Test of Correlated Groups Related to the Establishment Effect of Integrated Management System in Beneficiaries Satisfaction

	Correlated groups t			t	Freedom degree	Meaningful level
	mean	Standard deviation	Mean error			
Pre and post- establishment	5/59	4/85	0/473	11/81	104	0/000

Correlated groups t- Test show that the obtained t ($t=11/81$) is meaningful in 5% alpha level and null supposition is rejected. In other words, there is a meaningful difference between mean post- establishment of the integrated management system (37/19) and pre-establishment (31/60). Considering mean, it can be said that there is higher men in post- establishment of integrated management system. In result, it can be said that establishing integrated management system satisfy the beneficiaries.

According to Norton and Kaplan, these major criteria including customer satisfaction, customer maintenance,

customer's demands and customer profitability and market share and profit in any of the selected parts. Besides the above criteria, some values considered by customers and what managers intend to deliver to their customers are important.

According Kaplan and Norton, unqualified financial criteria for measuring performance stimulate companies to evaluate their other activities such as relationship with customers, innovation in processes and employee education.

And add other criteria for their performance measurement. Although the above activities form the basis

of any company's success but few people are able to select suitable criteria related to these activities with effective management such that these criteria lead companies in a balanced form to their perspective and mission.

This supposition is explainable by performance prism model. This model is focused on beneficiaries satisfaction, strategies, processes, capabilities, beneficiaries' effect, and have more integrated approach to beneficiaries in compare with other performance measurement systems such as balanced score card.

Also according to eminence model EFQM, encouragement and help to organizations for participating in activities improvement that finally lead to excellence and eminence in customer satisfaction and employee satisfaction is effective on society and commercial outcomes.

Second item: Does establishing the integrated management system have a positive effect on improving

learning and growth?

For answering this question, correlated groups t-Test is used. Null supposition and contrary supposition is as follows:

Null supposition= establishing the integrated management system has a positive effect on improving organizational learning and growth

Contrary supposition= establishing the integrated management system does not have any positive effect on improving organizational learning and growth.

Table 3
Descriptive Statistics of Establishment Effect of Integrated Management System on Organizational Learning and Growth Improvement

	Mean	Number	Standard deviation
Pre- establishment	58/67	105	9/34
Post- establishment	89/70	105	8/52

Table 4
Correlated T-Test of Establishment Effect of Integrated Management System on Organizational Learning and Growth Improvement

	Correlated groups t			t	Freedom degree	Meaningful level
	Mean	Standard deviation	Mean error			
Pre and post- establishment	31/04	11/61	1/13	27/38	104	0/000

Correlated groups t –Test results show that the obtained t (t=27/38) is meaningful in 5% alpha, and null supposition is rejected. In other words, there is a meaningful difference between post- establishment of integrated management system (89/71) and pre-establishment (58/67) and regarding the means, it can be said that post-establishment of integrated management system has higher mean. In result, it can be said that establishing integrated management system has a positive effect on improving organizational learning and growth.

In learning and growth perspective, the aim is providing infrastructures and sources that make possible organization's goals in other perspectives. Organizations should invest in their other infrastructures such as work force, systems and methods besides equipment, research and development to reach the long-range financial goals.

This supposition is explainable by balanced score card which focused on financial, customer, internal and learning and growth perspectives.

Here, BSC is introduced as a tool for measuring

performance and performance management that we can employ it in indentifying poor scopes and need to improve in company.

Third item: Does the establishment of integrated management system have any effect on internal processes?

For answering this question, correlated groups t- Test is used, null supposition and contrary supposition are as follows:

Null supposition: establishment of integrated management system has effects on internal processes

Contrary supposition: establishment of integrated management system does not have any effect on internal processes

Table 5
Descriptive Statistics of Establishment Effect of Integrated Management System on Internal Processes

	Mean	Number	Standard deviation
Pre- establishment	57/39	105	9/94
Post- establishment	87/33	105	9/05

Table 6
Correlated Groups' - Test of Establishment Effect of Integrated Management System on Internal Processes

	Correlated groups t			t	Freedom degree	Meaningful level
	Mean	Standard deviation	Mean error			
Pre and post- establishment	29/94	13/95	1/36	21/98	104	0/000

Correlated groups t-Test results show that the resulting t ($t=21/98$) is meaningful in 5% alpha level and null supposition is rejected. In other words, there is a meaningful difference between post-establishment mean of establishing integrated management system (87/33) and pre- establishment (57/39). Regarding means, it can be said that post- establishment of integrated management system has higher mean. In result, it can be said that establishing integrated management system has an effect on internal processes.

In this aspect, managers should determine internal processes, which are vital for their organizations. These vital processes are those that should help delivering high values to customer and reaching to financial goals. Organizations are more effective when every related activity perceived together and managed systematically and decisions related to the current operations are planned.

According to an organization's internal processes determination, two categories of main process and back-up process are separated. Main processes are including internal logistics, production, external logistics, marketing

and sale and after sale services. Back-up processes are including organizational structures and infrastructure, human source management, technology development and purchase.

Fourth item: Does establishing integrated management system have any effect on financial performance?

For answering this question, correlated groups t- Test is used. Null supposition and contrary supposition are as follows:

Null supposition= establishing integrated management system has an effect on financial performance

Contrary supposition= establishing integrated management system does not have any effect on financial performance

Table 5
Descriptive Statistics of Establishment Effect of Integrated Management System on Internal Processes

	Mean	Number	Standard deviation
Pre- establishment	1/58	11	1/84
Post- establishment	1/46	11	0/714

Table 8
Correlated Groups T-Test of Establishing Effect of Integrated Management System on Financial Performance

Correlated groups t				t	Freedom degree	Meaningful level
Pre and post- establishment	Mean	Standard deviation	Mean error	0/975	10	0/367
	0/369	1/07	0/411			

Correlated groups t- Test results show that resulting t ($t= 0/975$) is not meaningful in 5% alpha level and null supposition does not rejected. In other words, there is not a meaningful difference between post-establishment (1/87) and post- establishment (1/46) mean of integrated management system. However, pre- establishment of integrated management system mean is rather higher than post- establishment mean, but these differences are not statistically meaningful.

4. SUGGESTIONS BASED ON RESEARCH FINDINGS

(1) Considering the research results, it showed that establishing integrated management system satisfy beneficiaries. It is suggested that customer satisfaction is a main theme in most management system using balanced score card which is a frame for describing intra-organizational activities.

(2) Regarding the effect of establishing integrated management system on internal processes. It is suggested that organizations focused more on control and improving internal processes and managers raise this processes' role as vital for organizations.

(3) As establishing integrated management system has

a positive effect on organization's learning and growth, it is suggested that organizations invest on their other infrastructures such as work force, systems and methods besides equipment, research and development to reach long-range financial goals.

(4) Current results showed that establishing integrated management system does not have any effect on financial performance. It is suggested that Ports and Shipping's financial affairs arrange its current strategies and performance and improve its performance with updating them.

(5) It is suggested that for organizations should encouraged participating in improving those activities which finally lead to excellence and eminence in customer and employee satisfaction.

(6) It is suggested that for attracting customers, techniques such as encouragement and persuasion are used.

(7) Creating training workshops for employee in order to understand the value of establishing integrated management system in organizations is of managers' duties in Ports and Shipping organization

5. RESEARCH LIMITATIONS

Although it is tried to control all interfered variables and

sampling performed in ideal conditions but there are some limitations in practice that the most important limitations are as follows:

- (1) Lack of controlling all environmental factors related to the test- taking location
- (2) Not responding to all questionnaires result in lasting sampling time.
- (3) Lack of cooperation in sample members for administering questionnaires face the researcher to the minimum time for test
- (4) Small size of universe prevents extending the results to other communities.

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